GEORGIA INSTITUTE OF TECHNOLOGY — OFFICE OF CONTRACT ADMINISTRATION

PROJECT ADMINISTRATION DATA SHEET

[X] ORIGINAL [ ] REVISION NO. ____

Project No. E20-518 (05523-0A0) ~~GTRI~~/GIT DATE 10/11/85

Project Director: Dr J.E. Fitzgerald School/~~Lab~~ Civil Engineering

Sponsor: Georgia Tech Foundation, Campus

Type Agreement: GTF Faculty Assistance Grant

Award Period: From 9-1-85 To ~~8-31-86~~ 6-30-87 (Performance) — (Reports)

Sponsor Amount:	This Change	Total to Date
Estimated: $		$
Funded: $		$ 10,000

Cost Sharing Amount: $ None Cost Sharing No: ____

Title: Faculty Assistance Grant from Exxon Education Foundation

ADMINISTRATIVE DATA — OCA Contact Dow Hasty

1) Sponsor Technical Contact: 2) Sponsor Admin/Contractual Matters:

Ms Connie Parish

GTF

Campus

Defense Priority Rating: N/A Military Security Classification: N/A

(or) Company/Industrial Proprietary: N/A

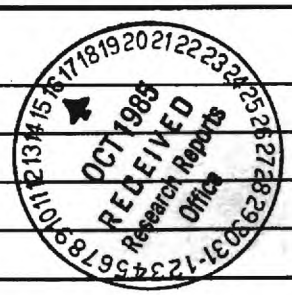
RESTRICTIONS

See Attached N/A Supplemental Information Sheet for Additional Requirements.

Travel: Foreign travel must have prior approval – Contact OCA in each case. Domestic travel requires sponsor approval where total will exceed greater of $500 or 125% of approved proposal budget category.

Equipment: Title vests with N/A

COMMENTS:



COPIES TO: SPONSOR'S I. D. NO. —

Project Director
Research Administrative Network
Research Property Management
Accounting
Procurement/GTRI Supply Services
Research Security Services
Reports Coordinator (OCA)
Research Communications (2)
GTRC
Library
Project File
Other

GEORGIA INSTITUTE OF TECHNOLOGY **OFFICE OF CONTRACT ADMINISTRATION**

SPONSORED PROJECT TERMINATION/CLOSEOUT SHEET

Date 5-7-87

Project No. E-20-518 School/~~Lab~~ CE

Includes Subproject No.(s) N/A

Project Director(s) J.E. Fitzgerald ~~GTRC~~ / GIT

Sponsor GTF

Title Exxon Faculty Development Grant

Effective Completion Date: 4/27/87 (Performance) 4/27/87 (Reports)

Grant/Contract Closeout Actions Remaining:

- [ ] None
- [X] Final Invoice or Final Fiscal Report
- [ ] Closing Documents
- [ ] Final Report of Inventions
- [ ] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other _____

Continues Project No. _____ Continued by Project No. _____

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Project File
Other Duane H.
Angela DuBose
Russ Embry

FORM OCA 69.285

GEORGIA INSTITUTE OF TECHNOLOGY

J. E. FITZGERALD
DIRECTOR
SCHOOL OF CIVIL ENGINEERING
ATLANTA, GEORGIA 30332

(404) 894-2

April 27, 1987

Richard R. Johnson
Research Director
Exxon Education Foundation
111 West 49th Street
New York, NY 10020-1198

Re: Exxon Foundation Grant Report for 1986-87

Dear Mr. Johnson:

This year the Exxon Foundation Funds were concentrated on two younger faculty members, Dr. Achintya Haldar ($8,781) and Dr. Aris Georgakakos ($7,400). The balance of the $20,000 grant was used for fringe benefits.

The excellent scholarly accomplishments of Dr. Haldar are given in Attachments 1 through 4.

The performance of Dr. Georgakakos in the area of scholarly publications (and the free time afforded him to generate research because of the Exxon grant) is listed on Attachment 5.

I am personally very proud of these young men and their accomplishments and grateful for the Exxon Foundation support in contributing to their success.

I only wish the funding could continue in order to help other new faculty at Tech.

Sincerely,

J. Edmund Fitzgerald
Director

JEF:ds

cc: Ms. ~~Ina Lashley~~ Pat Heitmueller
OCA Contracting Officer

Dean Sangster

Tammy Fennell-CE

ATTACHMENT 1

I. PUBLICATIONS

1. Books, part of books and reports

1. Haldar, A., Chapter 4 - Uncertainties in Structural Modeling and Response, and Appendix A - Probabilistic Approaches in Uncertainty Analysis, "Uncertainty and Conservatism in Seismic Analysis and Design of Nuclear Facilities," American Society of Civil Engineers, New York, NY, 198 , Chapter 4--51 pages, Appendix A--30 pages

2. Haldar, A., and Chern, S., "Probabilistic Analysis of Pore Pressure-Induced Damage Potential for Structures Subjected to Earthquake Motions," prepared for the National Science Foundation, Report No. SCEGIT-86, School of Civil Engineering, Georgia Institute of Technology, 1986 (based on Dr. Chern's Ph.D. dissertation) 327 pages.

3. Haldar, A., "A Study of Truss 1-A in the Nosedock Empennage Enclosure," Report Prepared for Tampa Steel Erecting Company, Tampa, Florida, September, 1986.

ATTACHMENT 2

I. PUBLICATIONS

2. Journal Papers (refereed) and other papers (full length papers were reviewed before acceptance)

1. Kanegaonkar, H.B., Haldar, A., and Ramesh, C.K., "Fatigue Analysis of Offshore Platforms with Uncertainty in Foundation Conditions", Journal of Structural Safety, Vol. 3, No. 2, pp. 117-134, 1986.

2. Haldar, A., Discussion of "Damage Probability of Turbine Missile Impact", Journal of the Structural Engineering Division, ASCE, (accepted for publication).

3. Kanegaonkar, H.B., and Haldar, A., "Non-Gaussian Response of Offshore Platforms: Dynamic", Journal of the Structural Engineering Division, ASCE, (accepted for publication).

4. Kanegaonkar, H.B., and Haldar, A., "Non-Gaussian Response of Offshore Platforms: Fatigue", Journal of the Structural Engineering Division, ASCE, (accepted for publication).

5. Haldar, A., and Chern, S., "Uncertainty in Dynamic Anisotropic Strength of Sand", Journal of the Geotechnical Engineering Division, ASCE, (accpeted for publication).

6. Haldar, A., and Luettich, S.M., "Risk of Structural Damage in Liquefaction," Third U.S. National Conference on Earth quake Engineering, Charleston, South Carolina, August 24-28,1986.

7. Haldar, A., and Kanegaonkar, H.B., "Stochastic Fatigue Response of Jackets Under Intermittent Wave Loading," Offshore Technology Conference, May, 1986.

8. Kanegaonkar, H.B., and Haldar, A., "A Non-Gaussian Closure for Stochastic Response of Geometrically Nonlinear Compliant Platforms," Journal of Offshore Mechanics and Arctic Engineering, ASME, (accepted for publication).

9. Kaneganonkar, H.B., and Haldar, A., Nonlinear Random Vibrations of Compliant Offshore Platforms," International Union of Theore tical and Applied Mechanics, Innsbruck, Austria, June 21-26, 1987 (participation by invitation only).

10. Haldar, A., and Chern, S., "Soil-Structure Interaction in Earthquake-Induced Liquefaction," Fifth Canadian Conference on Earthquake Engineering, Carleton University, Ottawa, Ontario, Canada, July 6-8, 1987.

11. Haldar, A., and Kanegaonkar, H.B., "Stochastic Fatigue of Nonlinear Offshore Structural Systems," Fifth International Conference on Applications of Statistics and Probability in Soil and Structural Engineering, Vancouver, Canada, (accepted for publication).

ATTACHMENT 2
(continued)

12. Kanegaonkar, H.B., and Haldar, A., "A Markovian Approach to Compliant Offshore Platforms," Marine Structural Reliability Symposium, Arlington, Virginia (accepted for publication).

13. Haldar, A., and Kanegaonkar, H.B., "Probabilistic Nonlinear Dynamics of Deepwater Compliant Platforms," Offshore Technology Conference, (accepted for publication).

14. Haldar, A., "Anisotropy in Liquefaction Risk Evaluation," Third International Conference on Soil Dynamics and Earthquake Engineering, Princeton University, June 22-24, 1987.

15. Kanegaonkar, H.B., and Haldar, A., "A Response Computation Technique for Offshore Platforms Subjected to a Class of Non-Normal Stochastic Loading", Fourth International Symposium on Numerical Methods in Engineering, Atlanta, Georgia, March 24-28, 1986.

16. Kanegaonkar, H.B., and Haldar, A., "Non-Gaussian Stochastic Response of Nonlinear Compliant Platforms," Journal of Probabilistic Engineering Mechanics, (accepted for publication).

ATTACHMENT 3

I. PUBLICATIONS

3. Papers (non-refereed)

1. Haldar, A., and Chern, S., "Probabilistic Prediction of Pore Pressure-Induced Settlement for Isotropically and Anisotropically Consolidated Deposits", International Symposium on Engineering Geology Problems in Seismic Areas, Italy, April 14-19, 1986.

2. Haldar, A., and Kanegaonkar, H.B., "Probabilistic Design of Offshore Platforms: Non-linear Wave Kinematics and Surface Fluctuation Effects", ASCE Spring Convention, Seattle, Washington, 1986.

3. Haldar, A., "Application of Risk-Based Design in Siting and Geotechnical Problems," National Science Foundation Workshop, Chicago, Illinois, pp. 52-54, August 4-5, 1986.

4. Haldar, A., and Chern, S., "Pore Pressure-Induced Structural Damage in an Anisotropic Soil Deposit," Eighth Symposium on Earthquake Engineering, University of Roorkee, December 29-31, 1986.

5. Kanegaonkar, H.B., and Haldar, A., "Dynamics of an Offshore Guyed Tower Under Random Wave Loading," ASCE-EMD Specialty Conference, State University of New York at Buffalo, Buffalo, New York, (accepted for publication).

6. Haldar, A., "Propagation of Uncertainties in Along Wind Response Analysis," ASCE-EMD Specialty Conference, State University of New York at Buffalo, Buffalo, New York, (under review).

ATTACHMENT 4

J. PRESENTATIONS

1. Haldar, A., "Construction Deficiency Evaluation," American Society of Civil Engineers, Georgia Section, Atlanta, January 10, 1986.

2. Haldar, A., and Kanegaonkar, H.B., "Probabilistic Design of Offshore Platforms: Non-linear Wave Kinematics and Surface Fluctuation Effects", ASCE Spring Convention, Seattle, Washington, 1986.

3. Kanegaonkar, H.B., and Haldar, A., "A Response Computation Technique for Offshore Platforms Subjected to a Class of Non-Normal Stochastic Loading", Fourth International Symposium on Numerical Methods in Engineering, Atlanta, Georgia, March 24-28, 1986.

4. Haldar, A., and Luettich, S.M., "Risk of Structural Damage in Liquefaction," Third U.S. National Conference on Earth quake Engineering, Charleston, South Carolina, August 24-28,1986.

5. Haldar, A., and Kanegaonkar, H.B., "Stochastic Fatigue Response of Jackets Under Intermittent Wave Loading," Offshore Technology Conference, May, 1986.

6. Haldar, A., "Application of Risk-Based Design in Siting and Geotechnical Problems," National Science Foundation Workshop, Chicago, Illinois, August 4-5, 1986.

7. Haldar, A., "A State-of-the-Art Review on Practical Structural Reliability Techniques, Theories and Their Applications," Central Research Institute of Building & Construction, Ministry of Metallurgical Industry, People's Republic of China, September 4, 1986.

8. Haldar, A., "A Review on Evaluation of Seismic Reliability of Structures," Central Research Institute of Building & Construction, Ministry of Metallurgical Industry, People's Republic of China, September 5, 1986.

9. Haldar, A., "Evaluation of Seismic Reliability of RC Buildings," Central Research Institute of Building & Construction, Ministry of Metallurgical Industry, People's Republic of China, September 5, 1986.

10. Haldar, A., "Probabilistic Evaluation of Seismic Induced Liquefaction of Soil and Risk of Structural Damage Associated With It," Central Research Institute of Building & Construction, Ministry of Metallurgical Industry, People's Republic of China, September 6, 1986.

ATTACHMENT 4
(continued)

11. Haldar, A., "A State-of-the-Art Review of Practical Structural and Geotechnical Reliability Techniques," Tongji University, Shanghai, People's Republic of China, September 15, 1986.

12. Haldar, A., "Evaluation of Seismic Reliability of Buildings and Probabilistic Evaluation of Seismic Induced Liquefaction of Soil," Tongji University, Shanghai, People's Republic of China, September 16, 1986.

13. Haldar, A., "Beam Design - Load and Resistance Factor Design," American Institute of Steel Construction, Atlanta, Georgia, December 18, 1986.

E. FORMAL PROPOSALS SUBMITTED:

1. "Optimal Real-Time Forecasting and Control of Reservoir Hydrosystems Using Remote and On-Site Sensors"
   U.S. Geological Survey / Department of the Interior
   Amount Requested: $146,672, February 28, 1986
   Result: Funded $146,672 (9/1/86 - 8/31/88)
   Project ranked 3rd nationwide (390 proposals)

2. "Optimal Reservoir Operation Schemes"
   Georgia Geological Survey / Department of the Interior
   Amount Requested: $32,500, December 16, 1986
   Result: Funded $32,500, (3/1/87 - 2/28/88)

3. "Optimal Operation Schemes for Hydropower Systems"
   Georgia Power Company
   Amount Requested: $19,500, February 27, 1987
   Result: Funded $19,500, (3/1/87 - 2/28/88)

4. "Optimal Real-Time Stochastic Control of Single Sludge Wastewater Treatment Systems,"
   National Science Foundation
   Amount Requested: $86,884, October 28, 1986
   Result: Pending

H. SERVICE:

1. On-Campus Committees:

1.1 Civil Engineering Undergraduate Committee (September 1985 - present). Supervised the development of the undegraduate C.E. student data base. This is a software package performing various statistical analyses of the C.E. student grades.

1.2 Ph.D. and M.Sc. Reading Committees:
Elie Haddad (M.S.)

2. Professional Activities:

2.1 Chairman, Centennial Colloquium, Hydrosystems Session, Georgia Institute of Technology, January 7-8, 1986.

2.2 Reviewer for the American Geophysical Union - Journal of Water Resources Research

2.3 Member of the Task Committee on Geostatistical Techniques in Geohydrology, American Society of Civil Engineers, Hydraulics Division.

2.4 Member and Faculty Advisor, Chi Epsilon

2.5 Consultant for the Portuguese Government: "Methodologies for Water Resources Planning and Management", (10/1/86 - 9/31/90).
Sponsored by the North Atlantic Treaty Organization (NATO).

I. PUBLICATIONS:

1. Published Journal Papers (refereed):

1.1 Georgakakos, A. P., and Marks, D. H., "A New Method for the Control of the River Nile," International Journal of Water Resources Development, Special Issue on the Upper Nile System, accepted for publication.

1.2 Georgakakos, A. P., and Marks, D. H., "A Stochastic Control Method of the Real-Time Operation of Reservoir Systems," Journal of the Water Resources Research, accepted for publication.

2. Published Papers (non-refereed):

2.1 Georgakakos, A. P., and Kabouris, I., "Instantaneous Unit Hydrographs: A Geomorphologic Approach," Technical Completion Report, Environmental Resources Center, ERC-03-86, Department of the Interior, U. S. Geological Survey, July 1986, 89p.

2.2 Georgakakos, A. P., "A State Space Model for River Routing," Technical Report, Department of the Interior, U.S. Geological Survey, December 13, 1986, 21p.

J. PRESENTATIONS:

1.1 Georgakakos, A.P., "Extended Linear Quadratic Gaussian Control for the Real-Time Operation of Reservoir Systems," The Bellman Continuum - Special NSF Workshop on Dynamic Programming and Water Resources, Georgia Institute of Technology, Atlanta, June 25-27, 1986. To appear in the book "Dynamic Programming for Optimal Water Resources Systems Management," Elsevier Science Publishing Co. New York.

1.2 Kabouris, I., and Georgakakos, A.P., "Instantaneous Unit Hydrographs Based on Geomorphologic Watershed Characteristics," Hydrosystems Seminars, Georgia Institute of Technology, May 29, 1986.

1.3 Georgakakos, A.P., "Optimal Operation Schemes for Hydropower Systems," Georgia Power Co., December 1, 1986.

L. **TECHNICAL SESSIONS CHAIRED:**

1. Chairman, Centennial Colloquium, Hydrosystems Session, Georgia Institute of Technology, January 7-8, 1986.